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TONOCOTE, A NEW GENUS AND SPECIES OF ZOBRACHOIDAE FROM ARGENTINA (CRUSTACEA: MARINE AMPHIPODA)

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Abstract.—A new genus and new species of marine zobrachoid amphipod, *Tonocote magellani,* is described from the Magellan Strait. It is a fossorial amphipod digging in shallow sands like a sand-crab. It differs from *Prantinus,* an Australian genus, in the broad article 4 of antenna 2, the much reduced epimeron 2 and the absence of posterior spines on article 5 of pereopods 3–4. Like *Prantinus* it differs from other zobrachoids in the urothoe-like antenna 1 with article 3 elongate.

The new genus *Tonocote* and its new species *T. magellani* are described from Argentina. Owing to the presence of small epimeron 2 the inclusion of *Tonocote* in the Zobrachoidae requires emendation of the diagnosis in that family.

Within the Zobrachoidae *Tonocote* resembles *Prantinus,* from Australia, in the urothoe-like antenna 1 with article 3 elongate. These two genera therefore comprise a subgroup differing from the other two genera of the family having a normal haustoriid antenna 1 with article 3 short. Owing to the early stages of investigation into these antipodeal groups, there may be future cause to divide these groups at subfamily level or higher.

References used in the identification process are: Barnard and Drummond (1978, 1982), Barnard and Clark (1982a, b, 1984). Methods of morphological description follow Barnard and Drummond (1978).

Master Legend

Uppercase letters refer to parts; lower case letters to left of uppercase letters refer to specimens noted in legends; lower case letters to right of uppercase refer to adjectival modifications in list below:

A, antenna; B, body; C, coxa; D, dactyl; E, eye (? or brain), subdivisions marked as E1, E2, E3, E4 (latter = ganglion); G, gnathopod; H, head; I, inner plate or ramus; J, pleopodal coupling hooks; L, labium; M, mandible; N, epimera; O, outer plate or ramus; P, pereopod; R, uropod; S, maxilliped; T, telson; U, labrum; W, pleon; X, maxilla; Y, pleopod; Z, gill; d, dorsal; r, right; s, setae removed; t, left.

Zobrachoidae Barnard and Drummond, 1982

Diagnosis (emendations in italics).—Rostrum well developed (for haustoriids), cheek poorly developed. Antenna 1 variable, article 1 short (typical) or elongate (apomorphic), articles 2–3 progressively shorter (typical) or elongate (apomorphic), flagella elongate (typical) or not (apomorphic), articles of peduncle weakly (typical) to strongly geniculate. Antenna 2 of haustorius form, article 4 expanded (plesiomorphic) or weakly so (apomorphic), article 5 shorter and narrower than article 4, these articles furnished with 1 or more longitudinal rows of facial armaments, ventral margin of article 4 with at least 3 kinds of setae: (1) elongate plumes, (2) shorter and stiffer glassy spines (often set in clusters) and, (3) bulbar-based penicillate setules; flagellum longer than ar-

ticle 4 of peduncle. Prebuccal complex massive, upper lip usually dominant. Mandibles bearing elongate strongly toothed incisors, rakers almost simple and numerous (4 or more), molar large, strongly extended, weakly triturative but with several strong cusps, usually 1 of these forming accessory chopper; palp 3-articulate, article 3 with numerous outer setae, setae awned (apomorphic) or not (typical and plesiomorphic). Lower lip with discrete inner lobes, mandibular extensions of outer lobes well developed. Maxilla 1 with uniarticulate palp, inner plate with more than 3 setae. Maxilla 2 ordinary, inner plate with oblique facial row of setae but poorly developed. Maxillipeds with unexpanded bases, normally enlarged plates, outer spinose; palp 4-articulate, article 2 expanded, article 4 clavate, at least 2+ setae apically. No baler lobes on maxillae or maxillipeds.

Coxa 2 small to medium, larger than coxa 1 and forming stepped intergrade between coxa 1 and coxa 3, coxa 4 dominant, coxa 3 lacking deep posteroventral lobe. Coxal gills on segments 2–6 or 2–5. Brood plates slender.

Gnathopods feeble, subchelate, grossly alike in proportions, wrists elongate, article 3 short. Article 5 of pereopods 3–4 broad, slightly expanded, not deeply lobate; dactyls of pereopods 3–5 well developed, those of pereopods 6–7 variable; pereopod 5 of haustorius form, articles 2, 4, 5 and 6 expanded, articles 5–6 with extensive facial rows of spines; pereopods 6–7 alike, article 4 broader than 6, articles 5–6 weakly expanded; no pereopod with underslung articulation.

Pleopod 2 usually inferior in size, number of articles, or setation; peduncles of pleopods not longer than wide, inner rami inferior; coupling hooks paired on each pleopod, usually inner rami bearing one basal clothespin spine. Epimeron 1 moderately to strongly developed; *epimeron 2 dominant in setation, often dominant in size.*

Urosomites ordinary, though often furnished with lateral teeth. Rami of uropods 1–2 linguiform, setose (not spinose); uropod 3 of ordinary gammarid-phoxocephalid kind, outer ramus dominant, 2-articulate, peduncle short, flat, expanded; rami poorly setose apically.

Telson variable in length, deeply cleft. Sexual dimorphism weak.

Variables.—Right and left laciniae mobiles not alike, right, if present, not distinct from raker row (*Zobracho* and *Tonocote*); palp article 3 outer setae awned (apomorphic) or not (typical and plesiomorphic). Maxillipedal palp article 4 multisetose or with main nail and 2 setules (*Prantinus*). Article 5 of pereopods 3–4 with thick posterior spines or only distal spines present (*Tonocote*).

Type genus.—*Zobracho* J. L. Barnard, 1961.

Composition.—*Bumeralius, Prantinus, Tonocote.*

Relationship.—Until our new genus came to light zobrachoids differed from urothoids in the absence of a ventral cephalic cheek, in the full development of the haustorius antenna 2, especially in the ventral armament, and in the dominance of setation (or actual size) on epimeron 2. This epimeron in *Tonocote* is much smaller than epimeron 3 and barely has dominant setation (2 setae versus 1 on epimeron 3). Zobrachoids bear linguiform rami of uropods 1–2, in contrast to urothoids (but 1 genus of urothoid lacks rami). *Prantinus* is furnished with a urothoid antenna 1, and has epimeron 2 dominant, but antenna 2, though not fully expanded, lacks seriate ranks of spines, and bears the ventral spination diversity not typical of urothoids. There is not a great deal of difference between Urohaustoriidae and Zobrachoidae except that zobrachoids have gnathopod 1 subchelate, epimeron 1 is clearly defined, the mandibular molar is less strongly triturative, weaker and furnished more with side cusps, mandibular

rakers are better developed, article 2 on the outer ramus of uropod 3 is usually better developed, coxae 1–2 are both small and contrasted with a very large coxa 3, and the rostrum is larger. However, *Prantinus* of the Zobrachoidae intergrades some of these differences. In addition our new genus *Tonocote* differs from urohaustoriids in the less expanded article 2 of the maxillipedal palp, the dactyl lacking inner setae.

Key to the Genera of Zobrachoidae (Males)

1. Antenna 1 of urothoe form 2
– Antenna 1 of haustorius form 3
2. Antenna 2 article 4 broad, epimeron 2 much smaller than 3, posterior spines on article 5 of pereopods 3–4 absent (distals present) .... *Tonocote,* new genus
– Antenna 2 article 4 slender, epimeron 2 as large as 3, posterior spines present on article 5 of pereopods 3–4 ..... *Prantinus* Barnard and Drummond, 1982
3. Telson elongate, rami of uropods 1–2 with many medial setae, no basoventral setae .... *Zobracho* Barnard, 1961
– Telson short, rami of uropods 1–2 lacking medial setae, bearing basoventral setae ..... *Bumeralius* Barnard and Drummond, 1982

Tonocote, new genus

Diagnosis.—Rostrum short and broad but head extended strongly anteriad from antennal notch. Peduncle of antenna 1 somewhat elongate, stout, articles 2 and 3 of peduncle progressively shortened, geniculate between articles 1 and 2, both flagella moderately long. Aesthetascs simple. Antenna 2 of haustorius form, article 4 expanded, article 5 small, articles 4–5 with facial armaments, article 4 with long ventral setae, subventral clusters of simple setae and facial armament row. Mandibular incisors slightly extended, of ordinary thickness, toothed; rakers 5 or more, serrate; molar small, thin, extended, with 1 main and 3–5 subapical cusps plus 3 marginal setae; setae of palp article 3 not awned, apically hooked. Mandibular lobes of lower lip well developed. Inner plate of maxilla 1 of medium size, sparsely setose, outer plate with 8 spines, palp short. Inner plate of maxilla 2 with weakly submarginal row of setae. Inner plate of maxilliped ordinary; outer plate with spines; palp article 2 expanded, article 3 not extraordinarily elongate, slightly expanded apically, dactyl unguiform, elongate, bearing apical nail and subsidiary setae.

Coxae 1–4 progressively larger, each slightly produced posteroventrally, coxae 1–2 small, subequal in size, coxae 2–6 with simple gills; oostegites unknown.

Gnathopods small, grossly alike, wrists elongate, hand somewhat smaller, mitelliform, subchelate, but palm more transverse on gnathopod 2 than on gnathopod 1. Dactyls of pereopods 3–7 distinguishable, those of pereopods 3–5 large, those of pereopods 6–7 very small; dactyl of pereopod 5 bladelike, lacking spines. Article 2 of pereopods 5–7 expanded less strongly on pereopod 6 than on 5 and 7; pereopod 5 of haustorius form; distal articles of pereopods 6–7 not underslung, 6 moderately widened, 7 more expanded; pereopods 6–7 otherwise similar, dominating pereopod 5.

Pleopod 2 slightly inferior, inner rami shorter than outer. Epimeron 2 dominantly setose, epimeron 3 dominant in size. Urosomites weakly produced and weakly setose ventrally. Rami of uropods 1–3 styliform, each outer ramus bearing 2 apical plumose setae, each inner ramus bearing 1 apical plumose seta; peduncles weakly setose. Uropod 3 outer ramus biarticulate and dominant, inner ramus with one basomedial seta. Telson short, broader than long.

Description.—Eyes weak, ocular ganglia visible. Dorsolateral surface of article 1 on antenna 1 furnished with small, poorly or-

ganized group of setae; article 2 moderately setose dorsolaterally; article 3 poorly setose. Article 3 of antenna 2 short, sparsely setose, flagellum much longer than article 4 of peduncle. No calceoli observed.

No right lacinia mobilis; left slender, bifid. Lower lip lacking cones. Inner plate of maxilla 1 with sparse apical and medial setae; several spines on outer plate bifid. Inner plate of maxilliped with 3 stout apical spines (right side missing 2).

Coxae 1–3 poorly setose, coxae 4 moderately setose. Gills forming stepped intergrades with gill 2 dominant. Gnathopod 2 lacking surficial buttons.

Pereopods 3–4 lacking extensive secondary facial rows of spines and ventral spines on article 5.

Uropods with sparse dorsal setae, medial margins of peduncles sparsely setose.

Type species.—*Tonocote magellani,* new species.

Etymology.—Named for a group of Indians in South America; masculine.

Composition.—Unique.

Tonocote magellani, new species
Figs. 1–6

Diagnosis.—With the characters of the genus.

Description of male.—Holotype male "a," 2.87 mm; head about 90 percent as long as wide, rostrum about 31 percent as long as remainder of head, eyes represented by granular tissue patches, no distinct ommatidia, ocular ganglia visible. Facial formula of setae on article 1 of antenna 1, ventral = 4 penicillate, dorsal = 2 setae + 1 medium, 1 tiny penicillate, (noting that dorsal–ventral aspect reversed from normal, non-urothoid kind of antenna 1); article 2 with partial circle of 8 long plumose setae; primary flagellum with 4 articles, aesthetasc formula = 1-1-1-0; accessory flagellum of 4 articles. Article 3 of antenna 2 with 2 medium setae; facial formula of spines on article 4 = 2-2-1-2; article 5 = 1 seta dorsally and 2 setae, 1 tiny penicillate; flagellum of 4 articles.

Upper lip with granulations. Right and left mandibular incisors with 3 and 5 teeth; 6 right rakers (no lacinia mobiles), 5 left; each molar with large main cusp bearing 2 long thin basal accessory cusps and apposing minor cusps on each side more apical, plus longer thin seta from base opposite to most basal accessory cusp; article 3 of palp slightly longer than article 2, latter with 1 inner seta, spine formula on right and left article 3 = 4-1-2. Inner plate of maxilla 1 bearing 2 apical setae and pair of mediofacial setae; outer plate with 8 spines; palp with 3 apical setae.

Inner plate of maxilliped with 3 stout spines, 2 medial and 2–4 apical setae; medial margin of outer plate with ragged mixture of spines and scattered small setae; apex with 1 seta; article 2 of palp with row of 5 mediofacial setae; article 3 with one subfacial seta and large serrate spine at base of dactyl.

Coxa 1 subrectangular, convex anteriorly, bearing 1 seta on ventral margin and posteroventral long plume and setule; coxa 2 similar in shape to coxa 1 but anterior convexity greater, with 2 long plumes and 2 setules; coxa 3 similar to coxa 2 but more elongate, with 3 plumose posteroventral setae and 1 seta more anterior; coxa 4 adze-shaped with 7 long plumose setae along ventral and posterior margins, 1 short anteroventral seta.

Setal and spine formulas on pereopod 3 = 2,2, 2-0, 2+1+1; on pereopod 4 = 2,2, 2-0, 2+1+1; margins of articles 5–6 not serrate. Article 2 of pereopods 5–7 armed sparsely with long setae posteriorly; dactyl of pereopod 5 with small anterior tooth.

Peduncular spine formulas of pleopods 1–3 = 2 and 0,2 and 0,2 and 0; segmental formulas = 8-5, 7-4, 8-6; basal setal formulas = 7-0-1-1, 4-1-1-1, 6-1-1-2, one peduncular seta each on pleopods 1 and 3 (2 naked).

Epimeron 1 rounded quadrate, with 1 tiny setule posteroventrally; epimeron 2 extended posteroventrally, posterior margin "crimped," 1 marginal posteroventral seta

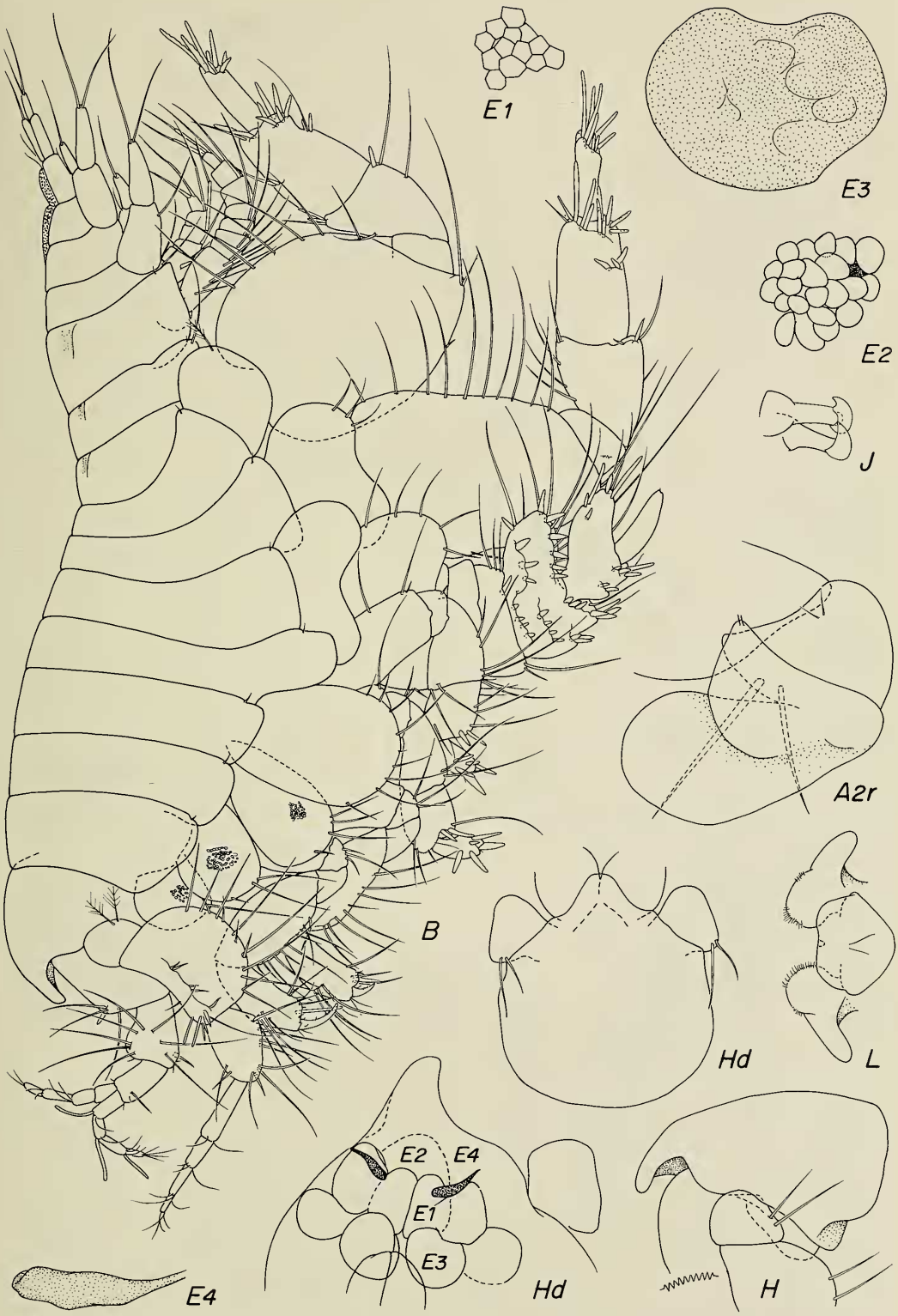

Fig. 1. *Tonocote magellani,* holotype male "a" 2.87 mm.

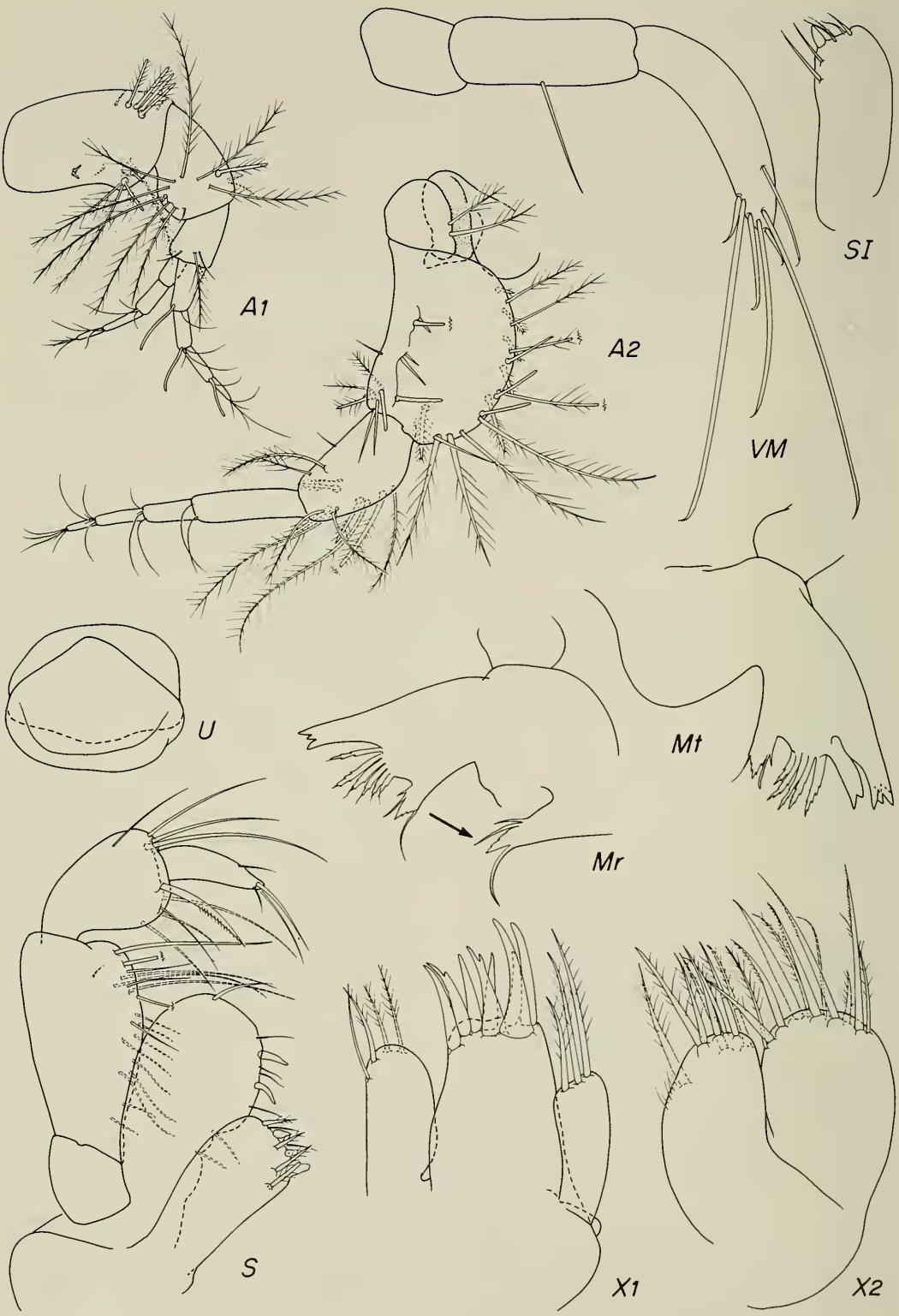

Fig. 2. *Tonocote magellani*, holotype male "a" 2.87 mm.

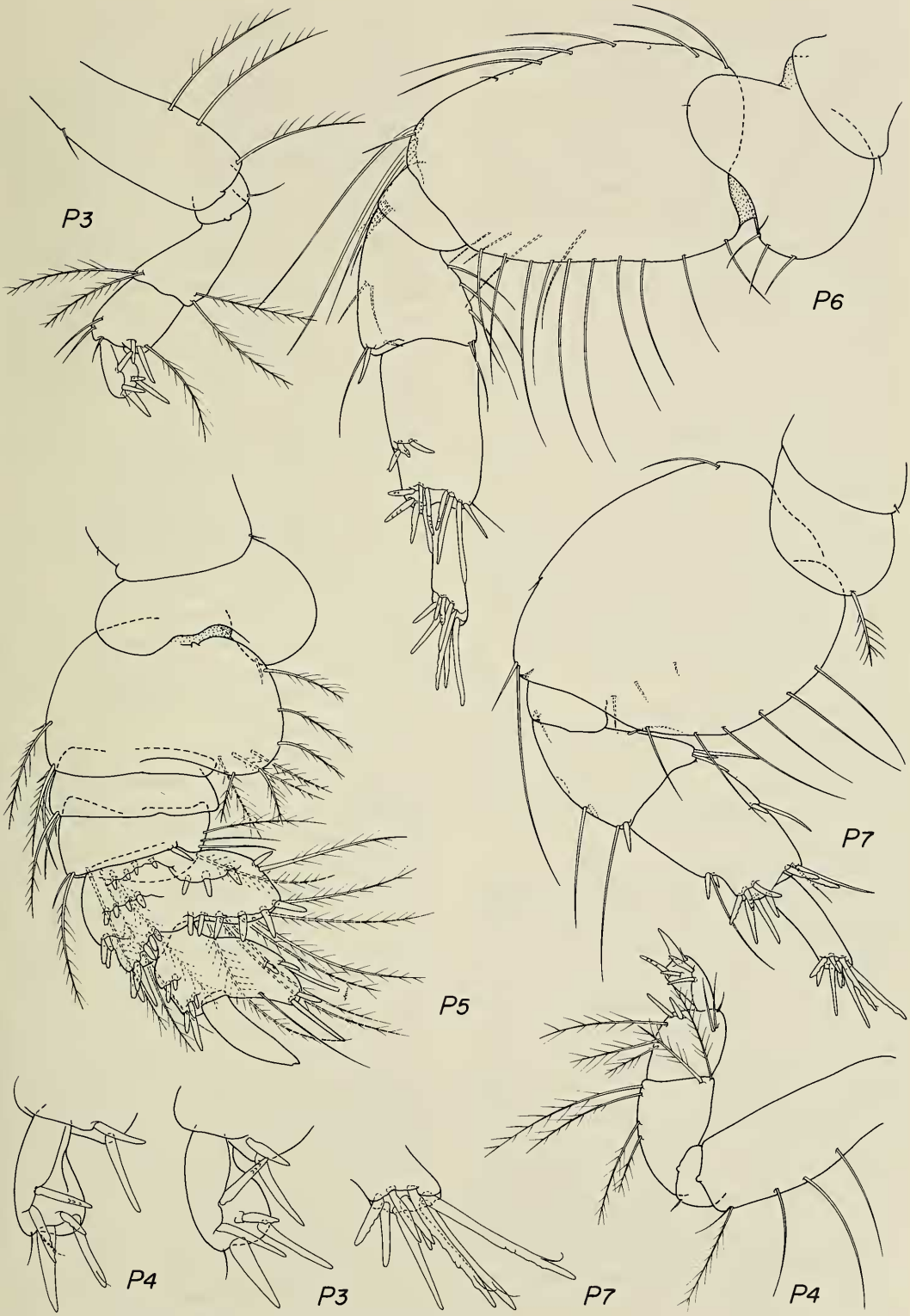

Fig. 3. *Tonocote magellani,* holotype male "a" 2.87 mm.

and 1 tiny facial seta near corner; epimeron 3 subsharply produced posteroventrally with 1 setule on posterior margin.

Apicomedial corners of peduncles on uropods 1–3 with 1 plumose seta; apicolateral corner on peduncle of uropod 1 with 1 plumose seta; uropod 3 peduncle medial margin with 1 small seta; inner rami of uropods 1–2 extending 50 percent along outer; setae of rami on uropods 1–3 = 1 plumose seta on medial margin of inner ramus, each outer ramus with 2 apical setae.

Telson about 1.5 times as wide as long, weakly alate laterally, cleft about 75 percent of its length, each apex with one long plume, each side with 2 small penicillate setules.

Glands discernible in coxae 1–3, peduncles of uropods 1–3, and telson.

Male "b," 2.78 mm: right mandible with 5 rakers, left with 4; epimeron 2 with an additional long facial seta at posteroventral corner; uropod 2 peduncle with 1 lateral seta; segmental formulas of pleopods 1–3 = 7-4, 7-4, 7-5, basal setal formulas = 8-1-2-1, 5-1-1-1, 3-1-9-1.

Relationship. — *Tonocote* resembles *Prantinus* in the following: shapes and setosity of coxae 1–4; similar molars; maxilliped inner plate shape and spination, outer plate shape, dactyl and palp 3 shape; and pleopods.

Tonocote differs from *Prantinus* in having: less reduced coxa 5; stouter antenna 1; larger article 4 of antenna 2; maxilla 1 inner plate more slender, outer plate with 8 spines (versus 11); maxilla 2 inner plate with many fewer medial setae; maxilliped outer plate spines fewer; gnathopods 1–2 lacking short penicillate spines on article 6, with posterior brushes on articles 2 and 3, more poorly developed on right; pereopods 3–4 lacking posterior spines on article 5, with sparser anterior setation on articles 4–5; pereopods 6–7 article 5 poorly spinose laterally; uropods 1–2 inner ramus short, peduncle poorly setose, outer ramus with 2 apical setae (versus 1); uropod 3 poorly setose; telson broader; epimeron 2 poorly developed in size and setation.

Tonocote differs from *Bumeralius* in the following: urothoid form of antenna 1; no bifid setae on antenna 2 article 4; weak to absent right lacinia mobilis; non-triturative molar with marginal cusps; maxilla 1 outer plate with eight spines (versus 11), inner plate lacking basomedial setae; maxilla 2 inner plate with only one seta in facial row (versus many); maxilliped inner plate truncated, with thick blunt spines, few setae, outer plate poorly armed medially, armaments stout, dactyl with apical setae only; coxae 1–7 sparsely setose, coxa 2 lacking large posteroventral lobe, coxa 7 lacking angles (versus angular); pereopods 6–7 poorly spinose on faces of articles 5 and 6, pereopods 3–4 lacking marginal posterior spines on article 5, pereopod 3 article 5 poorly setose anteriorly; gnathopods 1–2 poorly setose, palm well serrate, dactyl heavily armed; inner rami of pleopods slightly shorter than in *Bumeralius*; uropods 1–2 outer rami lacking basomedial setae, peduncles very poorly setose, uropod 2 outer ramus lacking lateral setae, uropod 3 and telson poorly setose in adult; mandibular palp not as clavate and spinose.

Tonocote differs from other zobrachoids in having epimeron 3 dominant in size (versus epimeron 2) although the original difference cited by Barnard and Drummond (1983) refers only to dominance in setation. *Tonocote* barely dominates in setation as epimeron 2 has only one to two long and one short setae compared to one short seta on epimeron 3. Other items of "variables" show *Tonocote* to be aberrant in the absence of right lacinia mobilis and lacking posterior spines on article 4 of pereopods 3–4 (but apical [?] spines remain). There is not a great deal of difference between Zobrachoidae and Urohaustoriidae except the latter have gnathopod 1 simple, loss of integrity in epimeron 1, large differential in size of epimeron 2 (tiny) and epimeron 3 (large and extended posteroventrally), small number of setae on palp article 1 of maxilla 1, reduction in extension and presence of cusps of mandibular molar and usually a reduc-

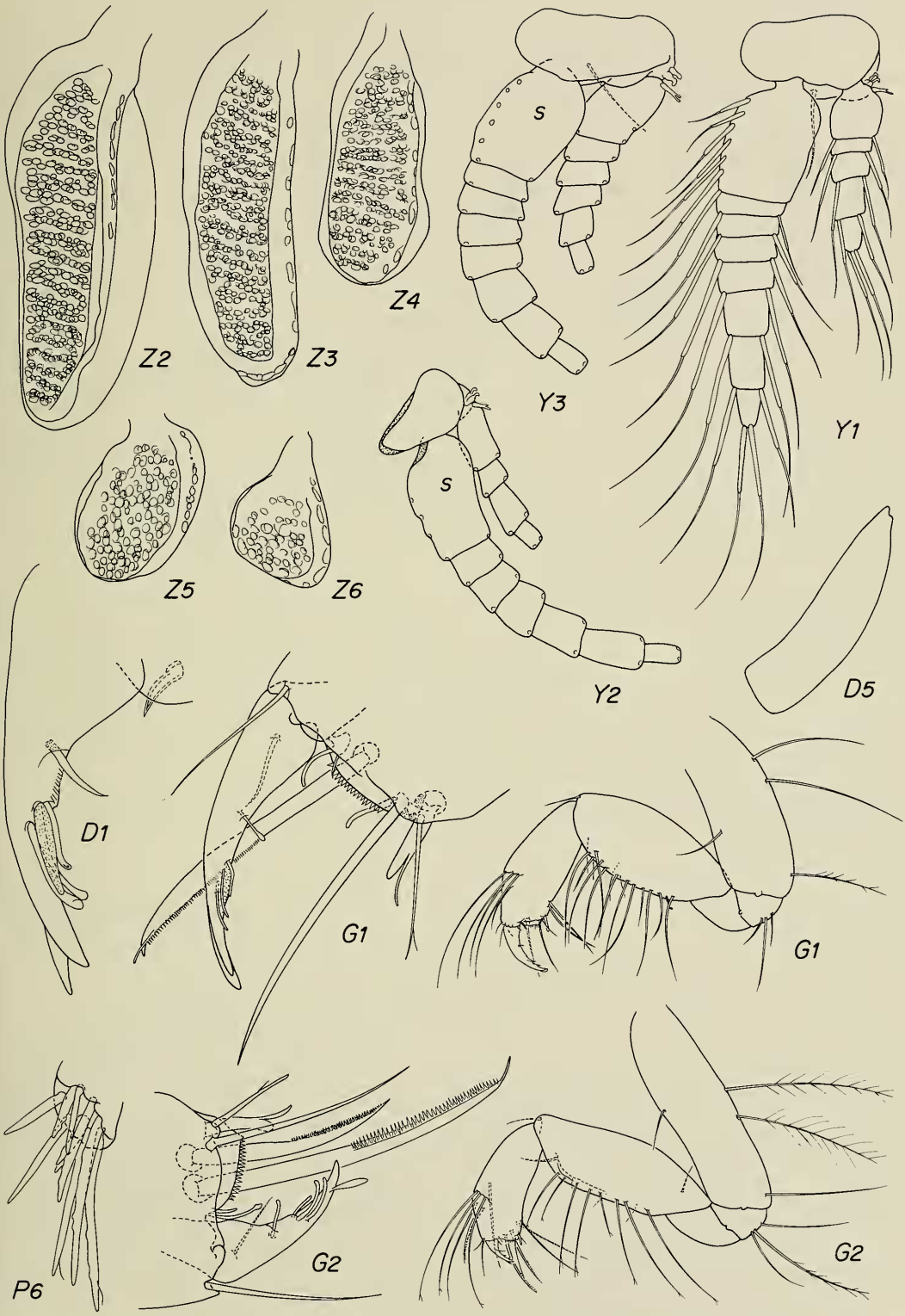

Fig. 4. *Tonocote magellani,* holotype male "a" 2.87 mm.

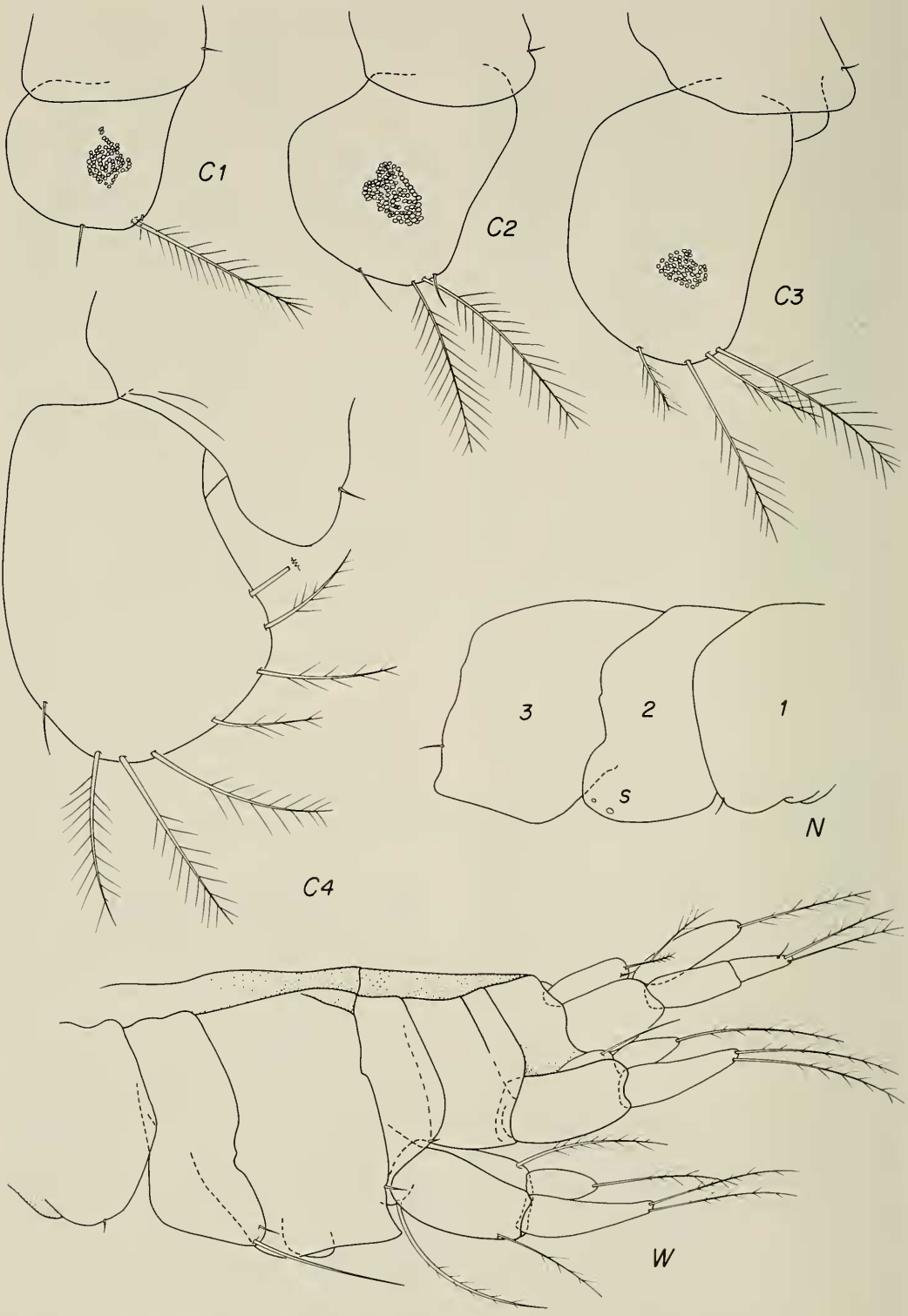

Fig. 5. *Tonocote magellani,* holotype male "a" 2.87 mm.

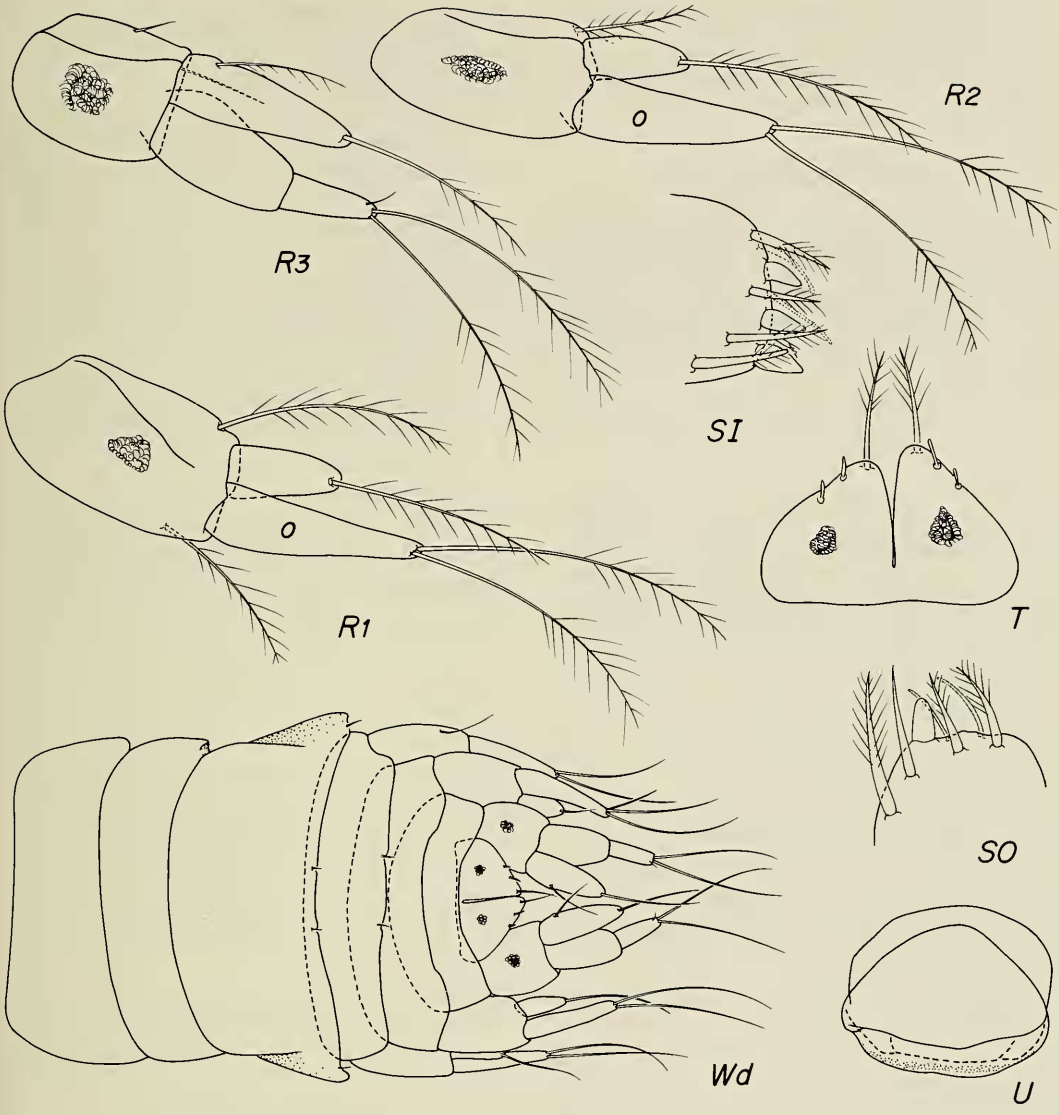

Fig. 6. *Tonocote magellani,* holotype male "a" 2.87 mm.

tion in article 2 of uropod 3 outer ramus and weaker rostrum. *Prantinus* of Zobrachoidae intergrades in the condition of epimeron 1 and the outer ramus of uropod 3. *Tonocote* has antenna 2 article 4 expanded; pereopods 3–4 lacking posterior spines (only terminal spines on article 5); and epimeron 2 much smaller than epimeron 3.

Illustrations.—Palp of mandible probably more clavate than shown owing to preservational defects.

Holotype.—USNM No. 195148, male "a," 2.87 mm (illustrated).

Type locality.—Eastern Straits of Magellan, 52°29.9′S, 69°05.9′W, 11–12 m, 9 Apr 1976, coll. Dr. Victor A. Gallardo.

Voucher material.—Type locality: male "b," 2.78 mm.

Etymology.—Named for the type locality.

Distribution.—Straits of Magellan, 11–12 m.

Acknowledgments

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